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GIFFORD PINCHOT, Forester.

FOREST PLANTING LEAFLET.

BLACK LOCUST (Robinia pseudacacia).

FORM AND SIZE.

The black locust (known also as "yellow locust" or often simply "locust") is a forest tree which usually attains a height of from 40 to 60 feet, with a diameter of from 1 to 1½ feet. Under the most favorable conditions it may reach a height of 80 feet and a diameter of 3 feet. In the forest the tree has a clear, straight stem and a small crown. In the open or when grown in plantations the stem tends to divide early, and a more spreading and longer crown is formed. Individual trees, especially when grown in the open, are liable to be bent or twisted by storms.

RANGE.

The natural range of the locust is throughout the Appalachian Mountains from Pennsylvania to Georgia and in certain portions of eastern Indian Territory and Arkansas. It reaches its finest development on the western slopes of the Appalachians in West Virginia.

The locust is found in mixture with other trees of the forest or in pure stands on forest land that has been burned over. On slopes its principal associates are black, red, and chestnut oaks, chestnut, pignut hickory, and maple. Along streams it occurs with ash, maple, black walnut, and other species.

Theoretically, the range for planting is extensive, covering the region between the Atlantic Ocean and the Mississippi River and extending west of the Mississippi River south of the thirty-eighth parallel as far as the Rocky Mountains. It is also adapted to the valleys of Utah, Idaho, and eastern Oregon and Washington when planted on irrigated land. The forest plantations to be seen near Salt Lake City, Utah, and Walla Walla, Wash., are among the best in the United States. Recent investigations indicate that the locust can be grown with success in portions of California. Its actual range for economic planting, however, is greatly restricted by the danger of insect injuries.

HABITS AND GROWTH.

The locust grows best on a deep, well-drained, fertile loam, but will grow on almost any soil except a wet, heavy one. It attains an excellent development on limestone formations.

Locust is very intolerant and requires an abundance of light during its entire life. When overshadowed it declines very quickly. In its native home it is found along streams, on the borders of the forest, or singly and in groups on the steep slopes.

Locust is a rapid-growing tree, but is relatively short lived. In good situations it makes an average annual height growth of 2 to 4 feet and a diameter growth of one-quarter to one-half inch. This rate is sometimes maintained for twenty-five or thirty years, but more frequently the growth becomes slower between the fifteenth and twentieth years.. After the fiftieth year growth almost entirely ceases.

THE LOCUST BORER.

The value of the locust is practically destroyed in many parts of the United States by the locust borer, which riddles the trunk and branches. The attack may commence when the trees are very small, and where the borers are numerous the plantation is killed outright within a short time. In localities where the attacks of this insect are slight it is sometimes possible to grow the trees to fence-post size before the plantation is seriously affected. Plantations of locust in Oklahoma, Indian Territory, and in the States west of the Rocky Mountains are almost entirely free from injury by this insect. In most of the States east of the Rocky Mountains planting is restricted or made impossible, according to the local severity of damage by the borer. In case this insect or others seriously injure a forest plantation of locust, the Bureau of Entomology of the Department of Agriculture should be consulted at once.

ECONOMIC USES.

The timber of the locust is extensively used for fence posts, ribs of vessels, treenails, insulator shanks, and vehicles. Its great durability in contact with the soil makes it very valuable for use in the ground, and its toughness and elasticity give it value where great strength is required. The tree is also valuable for fuel, being about equal to bur and white oak for this purpose.

The most common use of locust is for fence posts, for which purpose it has been extensively grown. Because of the large proportion of heartwood the young wood is almost as durable in the soil as the old. Locust posts, under average conditions, will last from fifteen to twenty-five years.

METHODS OF PROPAGATION.

Locust reproduces itself abundantly by seeds and by stump and root sprouts. It extends itself rapidly over old fields and along fence rows. Burned and cut-over lands in the mountains of Pennsylvania and West Virginia are thickly covered with locust seedlings, frequently giving rise to valuable pure stands of this species. The seed is retained on the trees well into the winter and distributed long distances by the strong winter winds. Wherever locust has been planted outside of its natural range the same tendency to spread by seed and root sprouts is exhibited, and young stands killed by fire replace themselves at once by sprouts.

PLANTING.

The seed may be gathered locally by the individual planter or may be purchased from dealers. It may be left in the pods and stored in a cool, dry place for as long as two years without serious harm. If the seeds are removed from the pods, they should be stratified in moist sand in a cool place. Just before planting, the seeds should be soaked for four or five days in water that has been heated to a temperature of 150° to 160° F., which will cause them to swell. Planting should immediately follow the soaking of the seeds, as under no consideration should they be allowed to dry out. The percentage of germination under these conditions is about 50 to 75 per cent.

Spring planting is in general advisable, although the seed can be sown as soon as it matures. The soil of the nursery should be well pulverized, rich, and loamy. If hand cultivation is to be given, the drills may be 12 to 15 inches apart, but if horse cultivation is to be practiced, rows 2 to 3½ feet apart will give the best results. The seed should not be covered to a greater depth than one-half inch, and the soil should be kept uniformly moist during germination. A pound contains about 29,000 seeds and is sufficient for a row 900 feet long. The seedlings will be large enough to set out in their permanent sites the following spring after planting the seed in the nursery, and in one year they should have attained a height of 1 to 3 feet.

Since the locust has a wide-spreading root system, it requires plenty of room for the proper development of the tree. A spacing of 4 feet apart each way is too close unless very early thinnings can be made and the material utilized for stakes. In the East the trees should be set at least 6 feet apart each way. In the Middle West they should be spaced 4 feet apart in rows 6 feet from each other or 3 feet apart in rows 8 feet apart.

Locust does well in pure stands, but in the semiarid region of the Middle West, where the forest plantation is valued also for its protective character, it may be mixed with Russian mulberry, Osage orange, or green ash.

CULTIVATION AND CARE.

In the Middle West careful preparation of the soil and cultivation for several years after planting are essential for successful growing of the locust. In order to secure a stem that will make straight posts, poorly formed or double-headed trees may be cut back to the ground or pruned two or three years after planting.

Stock should be entirely excluded from the plantation and every precaution taken to prevent fire from running over the ground.

Approved.
James Wilson,
Secretary.

Washington, D. C., *November 24, 1906.*

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